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## PATENT ABSTRACTS OF JAPAN

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(54) TWO-LAYER WATER-IN-OIL TYPE EMULSIFIED COMPOSITION COPYRIGHT: (C)2001,JPO

## (57) Abstract:

**PROBLEM TO BE SOLVED:** To obtain the subject composition capable of becoming a homogeneously mixed water-in-oil type emulsified composition through shaking and mixing the subject composition, and whose oil-water interface thereof stably separates into two layers after the lapse of a given time by including a specific silicone, specific oil and water.

**SOLUTION:** This composition is obtained by including (A) 0.01-0.5 wt.% of a polyether-modified silicone of the formula [A is methyl, phenyl or B; B is a polyoxalkylene of the formula: C<sub>3</sub>H<sub>6</sub>O(C<sub>2</sub>H<sub>4</sub>O)<sub>a</sub>(C<sub>3</sub>H<sub>6</sub>O)<sub>b</sub>R'(R' is H, an acyl, or 1-4C alkyl; (a) and b are each 5-50); R is methyl or phenyl; m is 50-1,000; n is 1-40; wherein having at least one polyoxalkylene in the molecule and also  $\leq$ 40 wt.% of the polyoxalkylene therein and the molecular weight of the polyether-modified silicone is  $\leq$ 30,000], (B) 5.0-80.0 wt.% of a silicone oil, (C) water, and if necessary, (D) a lower alcohol and (E) e.g. a polyhydric alcohol.





glycol do not seem to exceed 40% of the weight of aqueous phase. However, PEG-8 is used at more than 40wt% in the aqueous phase in Examples 3, 8 and 9 etc.

Citation 2 (JP-A-2001-58923) discloses a two-layer cosmetic composition which can be emulsified by shaking it and can separates into two layers after a given time.

The formulation of a transparent two-layer water-in-oil emulsion composition disclosed in Example 5 is as follows:

|  |         |
|--|---------|
| (1) squalane   | 3.0 wt% |
| (2) decamethylcyclopentasiloxane                                       | 50.0    |
| (3) dimethylpolysiloxane   | 2.0     |
| (4) tri-2-ethylhexanoic acid glycerol                                  | 0.5     |
| (5) tetra-2-ethylhexanoic acid pentaerythritol                         | 0.5     |
| (6) polyether-modified silicone<br>(represented by chemical formula 2) | 0.05    |
| (7) dynamite glycerin (pure glycerin)                                  | 10.0    |
| (8) dipropylene glycol   | 5.0     |
| (9) sorbitol   | 2.0     |
| (10) ethanol   | 10.0    |
| (11) ion-exchanged water   | qs 100  |
| (12) paraben   | qs      |
| (13) antioxidant   | qs      |
| (14) perfume   | qs      |

The aqueous phase may be composed of components 7 to 11. The total amount of polyols (glycerin, dipropylene glycol and sorbitol) is 38.6 wt% of the aqueous phase. The oily phase may mainly be composed of components 1 to 5. The total amount of silicone oils is 92.8 wt% of the oily phase. Also, Citation 2 discloses that this composition is transparent when emulsified. Thus, the refractive indexes of the aqueous phase and the oily phase of this composition are considered to be almost the same.



In addition, the polyether-modified silicone represented by chemical formula 1 is essential in the compositions disclosed in Citation 2.

On the other hand, a composition comprising silicones and polyols is disclosed as comparative example 1 in Citation 2 as follows:

|      |   |         |
|------|---|---------|
| (1)  | squalane  | 3.0 wt% |
| (2)  | decamethylcyclopentasiloxane                    | 50.0    |
| (3)  | dimethylpolysiloxane                            | 2.0     |
| (4)  | dimethylsiloxane/methylphenylsiloxane copolymer | 1.0     |
| (5)  | liquid paraffin                                 | 0       |
| (6)  | 2-ethylhexanoic acid cetyl ester                | 0.5     |
| (7)  | polyether-modified silicone *1                  | 0       |
| (8)  | polyether-modified silicone *2                  | 0       |
| (9)  | dynamite glycerin (pure glycerin)               | 10.0    |
| (10) | 1,3-butylene glycol                             | 5.0     |
| (11) | ethanol   | 0       |
| (12) | ion-exchanged water                             | 28.4    |
|      | phase separating ability after mixing           | poor    |
|      | transparency after shaking                      | poor    |
|      | usability                                       | good    |

The total amount of polyols (9-10) contained in the aqueous phase (9-12) is about 34.6 wt%. This may suggest that using polyols in an amount less than 40wt% in an aqueous phase in the absence of polyether-modified silicone cannot provide a composition which is transparent after shaking it.

**Our comments**

(1)-(2) Novelty and inventive step

The composition disclosed in Citation 1 includes less than 40wt%